

## INCIDENCE OF INTESTINAL PARASITES

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Attention has been drawn recently to the prevalence in temperate climates of amebic dysentery, as well as less disabling parasitic infections of the intestine. In order to ascertain the incidence of these infections in San Francisco and the Bay region, it was decided to examine the stools of 1000 cases of all sorts, both medical and surgical, following the technic of Kofoed and Swezy. During the two years (May 1921, 1923) in which this series was being collected and analyzed, preliminary reports were given out from time to time (Medical Clinics of North America, September, 1922, and June, 1923). In this paper the entire number will be considered.

Table 1. Pathogenic Parasites in 1000 Medical and Surgical Cases

E. Histolytica—	
Acute dysentery .....	13
Chronic or carrier.....	36
Giardia .....	34
Chilomastix .....	35
Trichomonas .....	17
Balantidium coli .....	1
Craigia .....	3
Spirochaetosis .....	3
Hookworm .....	11
Ascaris .....	6
Strongyloides .....	3
Oxyuris .....	2
Total cases .....	164
Per cent, 16.4.	

Taking all the parasites to which even the slightest pathogenicity has been assigned, it is seen (Table 1) that there were 164 cases. This gives an incidence of 16.4 per cent, but a somewhat lower figure would be more nearly correct, because some of the patients were referred for examination on account of suspected parasitic disease of the intestine, and so did not come in the "ordinary run" of a general practice.

Table 2. Non-Pathogenic Parasites in 1000 Medical and Surgical Cases

E. coli .....	65
E. nana .....	28
E. councilmania .....	13
Trichiuris .....	10
Blastocystis .....	innumerable

Harmless parasites of the intestines are encountered even more frequently than the pathogenic varieties (Table 2). These must be recognized, because resemblance to pathogens may lead to an incorrect diagnosis, followed by useless or even harmful treatment. We have included E. councilmania infections among the non-pathogenic varieties, even though there is some evidence that the parasite occasionally produces an ulcerative colitis. It is very difficult to differentiate this ameba accurately from E. coli, and usually no symptoms can be definitely ascribed to its presence in the intestine. Trichiuris in large numbers may produce symptoms, but as ordinarily encountered nothing can be attributed to the worm. Blastocystis is present in at least 50 per cent of the specimens examined. It

is of little or no importance, except that it may be confused with amebae or even flagellates, or may mask the presence and hinder the detection of really pathogenic parasites.

Table 3. Mixed Parasitic Infections in 1000 Medical and Surgical Cases

Combinations of amebae, flagellates, and worms, all pathogenic .....	8
Combinations of pathogenic and non-pathogenic .....	19

Mixed infections are fairly common (Table 3). When more than one pathogenic parasite is present in the intestine, it may be difficult to assign the agent of the symptoms. When non-pathogenic parasites are present, together with one or more harmful varieties, the real source of the symptoms may be entirely overlooked, unless very careful stool examinations are made. In general, however, the parasite that was responsible for the symptoms, or at least its cysts or ova, was found in enormous numbers in the stool.

Table 4. Stools of Non-Parasitic Cases

	Normal	Abnormal
Gall-bladder disease .....	32	0
Peptic ulcer .....	28	0
Chronic appendicitis .....	11	0
Acute appendicitis .....	2	0
Colitis .....	9	0
Viscerotosis .....	10	0
Pernicious anemia .....	6	0
Pelvic disease .....	7	0
Arthritis, all forms .....	14	0
Epilepsy .....	11	0
Carcinoma of stomach .....	1	4
Carcinoma of colon .....	3	3
Pellagra .....	3	1
Cholangitis .....	2	0
Cirrhosis of liver .....	2	0

With the exception of flagellate disease in children, all the patients with so-called pathogenic protozoa or helminths in the intestine had symptoms referable to the parasite. Those infected with non-pathogenic parasites had no such symptoms and their stools were normal, unless there was a non-parasitic lesion of the gastro-intestinal tract. Patients with well-defined disease not due to protozoa or worms at times had symptomatology suggesting intestinal parasites, but their stools were generally normal (Table 4), except in ulcerative conditions of the colon, or with bleeding lesions higher up.

Table 5. Results of Blood, Urine, and Wassermann Tests in 100 Cases

	Negative	Positive
Blood Wassermann test.....	95	5
Urine (routine tests) .....	85	15
Blood (routine wc, reds, hgb, smear) .....	85	15

To see whether routine examination of the stool gave results commensurate with the findings in routine blood and urine examinations, the percentage of "positives" in the last hundred cases of all sorts entering the office for diagnosis was plotted (Table 5). It is evident that abnormalities are not found any more frequently in blood and urine than in the stool. This is an argument for routine examination of the stool. The more complicated tests should be left to special technicians and com-

mercial laboratories, as in blood and urine examination.

#### CONCLUSION

Disabling disease of the intestine (amebic dysentery) and minor diseases due to pathogenic protozoa and helminths are fairly common (10 to 15 per cent of all cases in general practice). Routine stool examination is the sole means of absolute diagnosis of these infections, and requires no more time than the ordinary routine blood and urine tests.

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#### DISCUSSION

**Alfred C. Reed** (350 Post Street, San Francisco)—It is a pleasure to know that the human protozoa are receiving careful study in California, and that their importance is being recognized. Such a report as this is striking confirmation of the belief that we have been overlooking an important clinical field. The protozoa are difficult to recognize and do not produce characteristic symptoms. I am inclined to differ with Cheney in one particular, rather in his statement than in what I believe to be his intent. This is in regard to the pathogenicity of the flagellates and amebas of the human intestines. We hardly are familiar enough with these organisms yet, and study of them is too difficult to permit us to assume a final knowledge of their clinical and pathologic results. It seems to me safer to consider that all the protozoa, at least potentially, may be harmful though in a varying degree, of course, and often in proportion to the mass of infection. The judgment as to whether treatment should be instituted requires nice study in each patient. As Cheney says, it is often useless and may be harmful. In our series at Stanford and in private cases, we have found a majority of *E. histolytica* patients complaining of constipation and not of diarrhea. Nor is a history of dysentery or even of diarrhea obtainable in all patients who harbor *histolytica*. Protozoal infestation can no longer be regarded as a purely tropical affection. An incidence such as indicated in the paper under discussion demands attention. This is the situation in California. We very much need careful studies correlating the presence of protozoa with pathology and especially with clinical symptoms of disturbed physiology. Intestinal protozoa can injure the body in various ways other than that reflected by a diarrhea or dysentery. It is probably with these less obvious methods of damage that we have chiefly to deal clinically in California and temperate climates.

**John V. Barrows, M. D.** (Chapman Building, Los Angeles)—This paper is of particular interest and importance, because it considers intestinal protozoa of all kinds. It is of great value, because it studies these organisms in their relationship to disease generally.

A brief discussion permits only fragmentary remarks which I shall direct chiefly to the tables compiled. The incidence of 16.4 per cent is only slightly lower than given in my article before the society in 1921. However, I find the *chilomastix* by far the most predominating organism in my series of 750 protozoan infested cases.

The classification of non-pathogenic parasites is a subject of considerable disagreement among clinicians and protozoologists. It would be very difficult to prove that the parasites enumerated in Table 2 are "non-pathogenic." I think Musgrave rightly said, "They are a heap in bad company."

Table No. 4 is certainly based on inadequate analyses. In recent years I have seen no cases of colitis, pernicious anemia, or chronic arthritis in which I could call the stools normal. I desire to add that most cases of chronic appendicitis, epilepsy and such skin manifestations as pellagra on the average have very abnormal stools.

Table No. 5 stresses very nicely the need of rou-

tine stool analysis. I believe I am able to add that these infections, when marked by a fair degree of toxemia, show a helpful diagnostic blood picture. The haemoglobin and red cell count are low. The total leucocytes are depressed in number to a fair degree of leucopenia, unless there is some intercurrent infection. The polynuclear cells are definitely decreased. The total mononuclear percentage is decidedly increased. A typical picture approximately runs: Hb. 70 per cent; wbc. 6000; rbc. 3,400,000; polynuclears, 50 to 55 per cent; monos, 45 to 50 per cent.

Cheney is to be congratulated on having given to the medical profession a very valuable piece of work.

**M. C. Terry, M. D.** (921 Consolidated Building, Los Angeles)—Cheney's interesting paper, and particularly his Table No. 1, showing 16 per cent of intestinal parasitism in the ordinary run of unselected cases in a general practice, has led us to go over our files to see what per cent of the requests on our laboratory are for stool examinations. We find it has been 2½ per cent in the last two years.

Our percentage of positive findings is higher than in Cheney's table, as would be expected; the last 100 cases, not counting cultures and other special requests, and not counting repeated examinations in the same case, have shown 30 per cent of protozoan or helminthic infection.

For comparison we collected the last 500 Wassermann tests, exclusive of those from hospital and group practice where the test is made routinely, and we found that these made up 37 per cent of our work. These 500 Wassermann tests gave us 20.7 per cent of positive results (three plus and four plus), while 135 Wassermann tests done routinely from a general practice, during the same period, gave us 5.2 per cent of positives.

**Herbert Gunn, M. D.** (350 Post Street, San Francisco)—Cheney's very interesting paper, the result of an enormous amount of work hardly appreciable by one who has not made this sort of examinations himself, emphasizes two very important and generally unrecognized facts; first, the prevalence of various parasites in the intestinal tract and, second, the value of routine stool examinations as compared with routine blood and urine examinations.

The term "amebic dysentery," as generally used to cover all amebic infections of the intestinal tract, is a misnomer and should be discarded, as it implies the presence of an intestinal flux which generally is not present.

One not infrequently hears the excuse given for failure to examine a stool that the patient gave no history of having had a diarrhea or dysentery.

Intestinal amebiasis, a name given it by Musgrave many years ago, is far more correct. This may be supplemented by the terms, with dysentery, acute, chronic, carrier, etc.

The classification of the flagellates with the pathogenic parasites I do not believe is warranted with the evidence we have at hand at present. In my own experience, which covers a considerable number of these infections, there has been an entire lack of symptoms referable to the flagellates.

Cheney wisely remarks that one must be able to differentiate between the pathogenic and non-pathogenic parasites, in order to avoid useless or even harmful treatment.

I would add that parasites which have not been fairly definitely shown to be pathogenic and which produce practically no symptoms, unless they can be eradicated by simple treatment, should not be generally treated. I have seen several patients who have been decidedly harmed by prolonged attempts at removal of flagellates.

Cheney states that the patients with pathogenic parasites had symptoms referable to the parasites, also that patients with well-defined diseases not due to protozoa or worms at times had symptomatology suggesting intestinal parasites, etc. It seems to me

that this should be supplemented by the statement that not infrequently parasitic infections produce symptoms which are mistaken for various other complaints, for example—chronic appendicitis, cholangitis, peptic ulcer, gall-bladder disease, colitis, pernicious anemia, malaria, intestinal tuberculosis, etc. I have seen a number of cases of amebiasis mistaken for chronic appendicitis and several such errors where hookworm and ascaris were the causes.

**Doctor Cheney** (closing)—There is little doubt of the pathogenicity of *E. histolytica*, *Balantidium coli*, and the hookworm. These cases alone, amounting to 6.1 per cent of the series, are sufficient reason for making a routine stool examination, which is the sole means of absolute diagnosis of these diseases. The routine test need not consist of anything more than a five-minute examination of a wet smear.

As we have no certain cure for flagellate infections, with the possible exception of Giardiasis, it is difficult to say whether they are pathogenic or not. There is no way to contrast the condition before and after the eradication of the parasite.

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**The Doctor and the Press**—Now that medical publicity and the place the physician may occupy in it is receiving so much attention, it is interesting to see the reactions of newspaper editors. In discussing this subject Richard J. Finnegan, editor of the Chicago Journal, says: "The history of medicine in the United States is one of the most glorious contributions to modern civilization. Rome was great in lawyers and orators, but weak in doctors. It used to be the boast of pompous Romans that the Roman empire lived for 600 years without a recognized medical profession—but look where the Roman empire is today.

America would not be what it is at this hour without American medicine. This great profession has created and perfected itself, without undue interference or direction from legislatures, trotting to the beck and call of lay minorities that do not appreciate the devotion to the high calling, the self-abnegation and the fine sense of ethics, honor and public welfare that have marked the careers of American physicians and surgeons. . . .

The secret of the success of American medicine has been its freedom of initiative for the individual and the bounty of reward allotted to pre-eminent accomplishment resulting from years of study and labor.

I need not tell you that in recent years the world-wide tendency to government paternalism is beginning to assert itself against your citadel. You could tell me more instances than I could assemble to prove that statement. You could cite the example of Russia, England, Germany and other countries where medicine and surgery have been commercialized and governmentalized, to the detriment not only of the profession, but of the people and the countries. . . .

If the newspapers printed all the publicity puff that comes to them, from a third to a half of their space would be used to accommodate free advertising masquerading as news. Some of it is printed, of course, but the ordinary reader has no conception of the amount of time consumed in the newspaper office in eliminating the press agent's handout.

There is a frenzy for publicity. It touches not only business, but reaches into the homes of the high and the lowly. . . .

The American frenzy to appear in print can be pictured in no better phrase than 'a violent appetite' to bask in the spotlight. To get a picture or a speech in the paper seems to be life's sole ambition to some people. In fact, psychologists and police declare that certain of Chicago's most common crimes committed by girls and boys are inspired by a certain bug that they pick up in the swirl of this moving picture age. They have a violent appetite for notoriety."

## POSSIBILITY OF REMOTE EFFECTS IN HEAD INJURIES—A CASE REPORT \*

By CHARLES E. MORDOFF, M. D., Fresno

It is the unusual and obscure, in injuries, which keeps the interest of the physician in industry alive to the possibilities in industrial surgery. The case here reported has been of the utmost interest to those who have been actively engaged in treatment, and deserves the attention of all industrial physicians.

Frank H., a robust, very well nourished and developed man, age 48, a blacksmith and miner by occupation, was injured March 16, 1921. He was engaged in straightening a length of drill-steel, using a compressed-air hammer. The steel broke in a flaw, and a piece about a foot long struck him in the face, across the bridge of the nose, and over the right eye. He was "knocked out" for a few minutes, and suffered severe headache following the injury. He went immediately to the first-aid station and was given emergency treatment. The following day he reported to the first-aid nurse that he felt some better, but still suffered from headache. He continued at work suffering continuous headache, which he attributed to the noise of the machine. After three days, headache persisting, he drew his time and left the job without again visiting the first-aid station and without the knowledge of the first-aid nurse.

After leaving the work, he drifted about the State, seeking to obtain light employment, suffering continuous headache, until the latter part of May, when he had to leave a job near Fresno, and, his money having given out, he applied for admission to the Fresno County Hospital. He was found there about July 1, by the legal department of the company for which he had worked at the time of injury, and the medical department was notified.

When visited at the hospital, he was found to be suffering intense pain, especially in the right frontal and temporal regions, with a feeling, as he described it, "as if it would sometimes tear the top of my head off." This pain extended entirely around the right orbit. There was intense photophobia of both eyes, but more especially noticeable in the right. Conjunctival inflammation was very marked. This condition had obtained for several weeks, and treatment had been directed toward the correction of "herpes of a branch of the fifth nerve."

He was at once removed to another hospital and placed under the care of Dr. D. H. Trowbridge, where under active treatment the eye condition rapidly improved, and he was discharged from treatment about September 15, 1921.

At the beginning of this treatment, general physical examination revealed nothing. Wassermanns were negative, as were all other laboratory tests. Special examination: Vision, R. 20/200; L. 20/20. X-rays of the skull were negative for fracture. There was impairment of touch, pain and temperature sense in the distribution of the right infra and supra-orbital nerves.

After discharge, he worked for a time on a

\* Presented to the Section on Industrial Medicine and Surgery at the Fifty-second Annual Meeting of the California Medical Association, San Francisco, June, 1923.